

# Overview

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In this part, we have:

- thoroughly demonstrated four types of markets that GMO could end up with, which is also what potential synthetic biology products might meet one day;
- utilised analytical tools from game theory, a branch of information economics;
- evaluated our method by looking at its assumptions and found, to our dismay, the unwarranted ground of rationality;
- and spoke of its implication for policy making in the future.

## Overview

A common analogy for what synthetic biologists are doing is "vehicle constructing" or "car constructing". What our team has designed in our project is a step toward the "bacteria amphibious vehicle", or "bacteria transformer". As our project has a somewhat "fundamental" aura about it that might lead to a slight or tremendous shift of perspective in synthetic biology's future, we think perhaps it's yet too early for concrete policy suggestions concerning something that's still in its infancy.

However, not giving concrete policy suggestions doesn't mean we should be doing nothing. Instead, even more should be done in preparation for what policy need that may arise in the future. Such as, on what ground should these policies be made.

Synthetic biologists may one day want to market their proud products like GMOs. But instead of rushing into the deep waters of the market, many things should be considered beforehand, and perhaps concerns should be more than optimism in all time. Evaluating potential market state is one of these concerns, and since synthetic biology products are yet to put in much appearances in the market, we can look at how its more mature cousin GMO has been faring so far. From the various accounts of many papers that studied the GMO market, we get a rough picture. By their account, if use one word for a generalization of the market state of GMO, it would be "fiasco". (for more detail, see our report)

Almost all the scholars who made policy suggestions used cases such as Zimbabwe's rejection of GMO aid, EU's restriction of GMO trade and many people's GMO-reluctance as evidences of the "failure" state of GMO market, and many deduced that, one reason for such failure is because GMO is a "Lemon Market", which, according to the Nobel Prize Winner G.Akerlof, is the market instance when the inferior commodity gradually take over the market because of information asymmetry.

Therefore, many policies suggestions are aimed at promoting the information symmetry between the "knowledge giving" party and the "general public". Safety tests are spoken of as something just like a necessary procedure and nothing more than a necessary procedure, like a cookbook, and any GMO product just need to follow its steps one by one and it will pass, and it will be safe, and people's rejection of this safe-claimed product are a sign of ignorance and "information asymmetry" and need to be "helped", and safety tests should be "ensured", so these safe products will not suffer wrongly because of those unsafe ones around that turned the market into a "lemon" one.

We trust that most of the policy makers at least attempt to wield justice in their policies. However, attempting to do so doesn't guarantee succeeding in doing so. The almost one-sided undertone prevailing in the academic circles that has the *a priori* assumption of the validity of "strict" safety tests shows the hubris side of science, or scientists. For how are they so sure that there is not an information asymmetry between themselves and their biological products, or rather, between science and nature?

Because our project this year chose the Track of information processing, we were extra-sensitive on anything that contain the word "information", including "information economics".

Many scholars claim the GMO markets to be failing, but theoretical demonstration nor detailed description is not given Perhaps it's because they think it's too obvious for them and that a step-by-step demonstration might look schoolbook-like. However, we don't think anyone aside from those who have strong background in economics will understand the details, so, in our report, we thoroughly described four types of markets that GMO could end up with by utilising analytical tools from game theory, a branch of information economics, to construct the context in which "the failing market" is spoken of, as a first step. Serious scholars of economics could skip it as an "education" section for people from other disciplines and just go ahead.

Then, we made a summary of six large-sample surveys about people's attitudes toward GMO done across the globe in different countries and areas by former scholars, as an empirical evidence from which the scholars draw

support of their claim.

And then we analysed the assumptions made at the beginning when we are laying the outline of this whole context, and found out the fallibility of one assumption which could lead to potential inversion of the verdict: the rationality assumption, which has been demonstrated by behavioral economists to be fallible.

That rationality could be fallible has been realized by people, but knowing something doesn't equal to doing by its creed. This important discovery of the behavioral economists are not put into practice enough, I'm afraid; at least not when it comes to the policy concerns of GMO.

So, finally, we will quote the ending paragraphs of our report as a reminder for potential GMO policy makers.

"No one can claim truth when Truth is undefined, so there will always be confliction from two different sides. Instead of trying to convert the other to ones side, both sides should actually listen to each other and collaborate to deepen the understanding of the matter that lies at the heart of the confliction. And as for the truth, both sides better be saying: "Let time decide."

And before more is revealed in the course of time, we better hope for the best but assume the worst. After all, better be safe than sorry, and policy makers should look inward and examine their innermost beliefs for any bias that may just be lurking under their attempts, albeit sincere, for justice."

A pdf Version of our Report is *here*.